MARINE SPILL RESPONSE ON CANADA’S WEST COAST

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WCMRC is the only Transport Canada-certified marine spill response organization on Canada’s West Coast. Our mandate under the Canada Shipping Act is to be prepared to respond to marine spills along all 27,000 km of B.C.’s coastline, and to mitigate impacts when a spill occurs. This includes the protection of wildlife, economic and environmental sensitivities, and the safety of responders and the public. On average, we respond to 20 spills each year.

**A NATIONAL RESPONSE REGIME**

Transport Canada regulates the transportation of oil in Canada and sets out tiered response capabilities that response organizations (ROs) must meet to be certified to respond to marine spills. The standards for the entire regime are described in the Canada Shipping Act. WCMRC surpasses these standards.

- **Oil Volume.** ROs must have equipment to handle a 10,000 tonne spill. WCMRC maintains more equipment than required.

- **Response Times.** The Canada Shipping Act sets the upper limits for response times depending on the location and size of a spill. While WCMRC typically responds faster than required, standards for the West Coast vary from six hours inside Port Metro Vancouver’s boundary to 72 hours plus travel time outside of WCMRC’s core response area.

- **Response Duration.** ROs are required to complete on-water recovery within 10 days of a spill and to clean up 500 metres of shoreline each day.

**TRIENNIAL CERTIFICATION**

The Canada Shipping Act outlines preparedness and response requirements that must be met by ROs through a triennial certification process overseen by Transport Canada. WCMRC holds table-top and equipment deployment exercises and completes training courses within each certification period to demonstrate its response capacity.

**OCEANS PROTECTION PLAN**

The $1.5 billion federal Oceans Protection Plan was launched in 2016 to build national capacity and ensure maximum protection of Canada’s coastal resources. The program outlines improved safety and shipping measures, changes to regulatory requirements, the creation of Indigenous Community Response Teams, and protection strategies for the national marine environment, among other measures.
PREPAREDNESS AND RESPONSE READINESS

WCMRC maintains the infrastructure, equipment, bases, personnel and management resources to protect coastal B.C. from oil spills. Our team regularly researches, tests and implements new equipment and technologies. This includes training in advanced recovery techniques, commissioning purpose-built vessels and field-testing new equipment, such as fuzzy-disk skimmers, current busters, infrared cameras and aerostat surveillance balloons.

RESPONDERS AT THE READY

Core Response Force. WCMRC’s Operations team conducts continuous training and equipment maintenance to ensure ready-state response capability.

Contractor Response Force. Each year, WCMRC trains more than 100 contractors, including fisherman, First Nations, marine professionals and Vessels of Opportunity.

Responders on call. WCMRC’s responders are on-call 24/7 and trained to respond to spills at any time of day or night.

EXCELLENT RESPONSE TIMES

- In the past 19 years, our average response time in the Lower Mainland has been approximately 60 minutes.
- Our newest high-speed response vessels have a top speed of 26 knots and can travel anywhere in Burrard Inlet in under 15 minutes. Once the Trans Mountain enhancements are complete, more of these vessels will be stationed at coastal locations in the Salish Sea.

Trans Mountain Enhancements

With the Trans Mountain pipeline expansion scheduled to begin operations in 2021, WCMRC is implementing a $150 million enhancement program. These enhancements will cut response times in half, double the existing federal planning standards, and significantly increase response capabilities along B.C.’s South Coast through investment in new equipment and response bases.

The enhanced response regime will be available to all users of the local marine network.

Enhancement Details

- Creation of more than 120 permanent, full-time jobs
- Reduced initial response times:
  - A maximum of two hours for Vancouver Harbour and the Fraser River west of Port Mann Bridge
  - A maximum of six hours for the remainder of the South Coast
- Completed delivery of 20,000 tonnes of capacity within 36 hours of activation
- Approximately 40 new response vessels (roughly doubling WCMRC’s fleet)
Transport Canada is leading regional response planning initiatives based on a risk management framework. The regional response plans are being developed by local task forces and allow for regulatory flexibility for regional differences and levels of risk. WCMRC and the Canadian Coast Guard have area-specific oil spill response plans that are being updated and integrated into the federal government’s initiative. These plans were developed in collaboration with coastal First Nations, governments and communities, and take into account each area’s unique geography, environmental sensitivities and marine traffic volumes.

**GEOGRAPHIC RESPONSE STRATEGIES**

Geographic Response Strategies (GRS) are site-specific response plans that detail the location of vulnerable shoreline areas and describe how to protect them. GRS safeguard archaeological and cultural sites, critical microhabitats and infrastructure, public beaches and parks, sensitive shorelines, and water-dependent commercial users. They are used during the first 24 hours of a response and contain crucial information on unique operating issues, notification protocols, mobilization procedures, logistical resources, operations and planning materials. They are designed to supplement existing regional response plans and serve as flexible guidelines for on-scene responders.

Since creating our first GRS in 2013, WCMRC has met with thousands of British Columbians to map their part of the Coast and ensure local sensitivities are protected. Each of the 400+ GRS we’ve created have been field-tested to ensure the strategy is effective. Our goal is to create strategies for all 27,000 km of B.C.’s coastline.
Spill response regimes worldwide are designed around a system that is scalable, allowing resources to be cascaded in from other regions and from mutual aid partners if required. Spill response follows universal and established protocols:

- **Control** the source of the spill and contain spilled product.
- **Protect** environmentally, culturally and economically sensitive shoreline areas.
- **Recover** the oil and transfer it to secure storage.

### WHO IS INVOLVED?

Canada’s spill response regime brings together industry, communities, the provinces and federal agencies to protect Canada’s marine environment. During a spill, each entity performs specific roles managed by an Incident Command System under the authority of a Unified Command. In British Columbia, the following stakeholders are typically involved in a spill response:

- **Polluter**
  Leads the overall response.

- **Canadian Coast Guard**
  Federal Incident Commander. Has authority to take command if the Polluter is unable or unwilling.

- **Environment and Climate Change Canada, B.C. Ministry of Environment, and Department of Fisheries and Oceans**
  Provide environmental expertise. Assist in identifying environmental, cultural and economic priorities.

- **WCMRC**
  Executes the operational spill response.

- **First Nations and Municipalities**
  Participate in the Unified Command.

- **Transport Canada**
  Manages, monitors, reviews, enforces and implements standards and legislation.

Stakeholders from other organizations and communities may also be involved.

### NO TWO SPILLS ARE THE SAME

It isn’t possible to provide a standard estimate of the percentage of oil recovered from a spill. The size of a spill, oil type, response methods and the environmental conditions at the time of the incident all affect how much oil is recovered. Similar to wildfire fighting, spill response can be impacted by wind and weather conditions. Depending on the type of product, a significant portion can be lost to evaporation. Typically, mechanical systems recover about five to 25 per cent of product in open water conditions. WCMRC has experienced mechanical recovery rates as high as 94 per cent in sheltered water.
Protection and Recovery

Once oil is spilled at sea, it will naturally spread and disperse under the influence of wind, waves and currents, changing its composition and environmental impact. As a cleanup operation unfolds, different techniques may be employed to limit the impacts of the spill on the marine environment.

**DISPERSANTS**

Dispersants quickly transfer large quantities of oil into the water column, accelerating the natural dispersion and biodegradation from micro-organisms break down the oil. To be effective dispersants are used early in a response. The use of dispersants requires the approval of Environment and Climate Change Canada.

**IN-SITU BURNING**

Burning floating oil at sea is called in-situ burning. It requires the oil to be concentrated and can quickly remove large amounts of oil from the sea's surface. In-situ burning requires the approval of Environment and Climate Change Canada.

**BIODEGRADATION**

Natural biodegradation and evaporation of oil can greatly impact the amount of oil that is recovered by response crews. Petroleum hydrocarbons occur naturally in all marine environments and oil-degrading micro-organisms have evolved to consume them. The rate of biodegradation depends on the type of product spilled, environmental conditions and the size of the spill.

**SHORELINE PROTECTION**

Shoreline protection aims to prevent or minimize contact between oil and the shore zone. Strategies include deflecting oil away from the shore with the use of booms and trapping or collecting oil.

**RECOVERY OF SUNKEN AND SUBMERGED OIL**

A combination of weathering, sediment and wave action can cause oil to sink or submerge below the surface of the sea. Once oil is removed from the water's surface, several different processes can be employed to detect and recover sunken or submerged oil, including the use of sonar systems, underwater visualization systems, diver observations and vacuuming, sorbents, dredging and remobilization.

**SHORELINE FLUSHING**

Shoreline flushing causes minimal ecological damage and removes oil quickly. Shoreline boom is first deployed to contain the oil. Water is then pumped from the sea through a large sprinkler system. As the oil rises to the surface, natural wave and tidal action flush it from the shore. Skimmers then recover the oil from the water's surface.

**WILDLIFE REHABILITATION**

The first 48 hours after a spill are critical for wildlife rehabilitation. Professional wildlife teams are quickly activated to locate and begin treatment of oiled wildlife and ensure appropriate, safe and high-quality care. Untrained persons should never attempt to capture, wash or treat a wild animal impacted by oil.

**SHORELINE CLEANUP ASSESSMENT TECHNIQUE**

SCAT teams gather crucial field data on the location, degree and type of shoreline contamination. The data is used to create a shoreline cleanup plan that maximizes recovery and minimizes the risk of further damage. SCAT begins once the threat of shoreline contamination is identified and continues throughout the response, ensuring the cleanup is based on up-to-date data.

**MECHANICAL RECOVERY**

The primary equipment used to recover oil during a marine response is:

1. **Response vessels** perform a variety of functions, from deploying boom to transporting personnel and equipment.
2. **Booms** limit the spread of oil, deflect oil away from sensitive areas and contain the oil for recovery.
3. **Mechanical skimmers** recover spilled oil from the water's surface, and pump oil into a storage vessel, such as a barge.
4. **Sorbents** are materials used to recover oil through absorption.

**Shoreline Cleanup**

During a spill, oil may drift toward the shore where it can become stranded due to the action of currents, waves and tides. To cleanup oil on the shoreline or seabed several strategies may be employed.
HOW DOES A SPILL RESPONSE UNFOLD?

When an incident occurs, a process is set in motion to manage the response operation. This includes notification of first responders, resource mobilization and deployment, and ongoing response management.

WHO PAYS FOR MARINE SPILL RESPONSE?

As required under the Canada Shipping Act, WCMRC’s operations and equipment are funded by bulk oil cargo fees and by membership fees from shipping and oil handling companies that operate along the West Coast. Any vessel larger than 400 tonnes calling on a B.C. port is required to have a membership with WCMRC. Any oil transporting vessel over 150 tonnes is also required to pay membership fees, including barges and refueling vessels. In total, we have more than 2,300 members.

In the event of a spill, the polluter is required to pay 100 per cent of WCMRC’s cleanup costs, and to have insurance to cover these costs.

CAN WE CLEANUP DILUTED BITUMEN?

Bitumen from Alberta’s oil sands is too thick to flow through pipelines, so it is thinned with a light petroleum product called diluent. The resulting product is known as diluted bitumen, or dilbit. Because it weighs less than water, dilbit floats and is recoverable using oil skimmers, sorbent booms and sorbet pads. WCMRC has successfully recovered dilbit using brush skimmers. WCMRC is the only response organization in the world with experience cleaning up diluted bitumen in the marine environment.

Tests completed by the federal government have revealed that dilbit behaves similarly to conventional crude oil when released into a marine environment. These types of oil can sink if given the opportunity to mix with sediment. Recovering the oil before it has a chance to mix with sediment has become a critical component of our response planning.
If a spill were to occur in or near a trans-boundary area, a joint response from affected countries would be undertaken by the agencies of the affected nations.

CANADA’S INTERNATIONAL PARTNERS

Canada and the U.S. have been working in close cooperation on preparedness and response for cross-boundary spills since the 1970s. A Canada-U.S. Joint Marine Pollution Contingency Plan was formalized in 2003, and joint exercises occur regularly to test the system. Canada also collaborates on spill response planning with other Arctic Council countries.

MUTUAL AID AGREEMENTS

WCMRC has mutual aid agreements with ROs in Canada and the U.S. These include ECRC-SIMEC in eastern Canada, SEAPRO in Alaska, and NRC in Washington State. These mutual aid agreements are formal contracts between response organizations to lend assistance across jurisdictional boundaries when required.

INTERNATIONAL COOPERATION

Canada and the United States have been working in close cooperation on preparedness and response for cross-boundary spills since the 1970s.
To activate us, call our 24-hour spill emergency line:

1-855-294-9116

HEADQUARTERS

Burnaby
206-3500 Gilmore Way
Burnaby, B.C. V5G 0B8
604-294-6001

RESPONSE BASES

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6476A Norcross Road
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